Nova Scotia

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ANNUAL REPORT

for the fiscal year ending March 31, 1990

Department of Fisheries

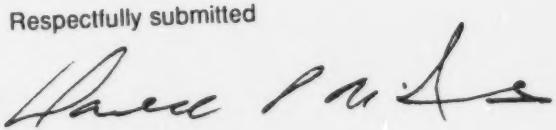
92-00213/

To His Honour
The Honourable Lloyd R. Crouse, P.C.
Lieutenant-Governor of Nova Scotia

May It Please Your Honour:

I have the honour to submit herewith the 26th Annual Report of the Department of Fisheries for the fiscal year ending March 31, 1990.

Respectfully submitted



Donald P. McInnes
Minister of Fisheries

To The Honourable Donald P. McInnes
Minister of Fisheries

Sir:

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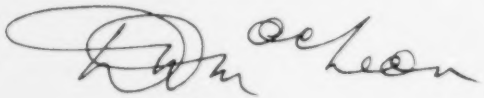

D.A. MacLean
Deputy Minister

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THE FISHING INDUSTRY

Total landings of commercial marine species in Nova Scotia decreased slightly in 1989–90.

Fishermen in the province landed 491 711 metric tons of fish, shellfish, and marine plants in 1989, representing a 5.9 per cent slide over the 1988 catch of 522 366 metric tons. The landed value of all species was nearly the same in 1989 as in 1988: $438 million compared to $439 million.

Lobster again was the most valuable species in 1989, worth $138.8 million to fishermen. Scallop was the second most valuable, at $79 million, while cod provided nearly $78 million to fishermen in that sector of the industry.

Both the groundfish and the pelagic sectors of the fishery posted decreases in landings of 4.2 per cent and 29.7 per cent respectively. The shellfish sector, however, showed an increase in landed weight of 20.5 per cent in 1989.

INDUSTRIAL DEVELOPMENT

The Industrial Development Division administers two major programs.

1. The Development Program:

- provides cost-sharing incentives to help industry upgrade fishing vessels, harbour infrastructure, shore based facilities, and processing plants with proven technology. The program assists the following specific fishery related areas: Processing Sector Development: bait freezing, aquaculture; Harvesting Sector Development: onboard fish handling containers; Onshore Sector Development: private wharves, vessel haulouts, slipways and ramps;

- supports development and demonstration projects that introduce new or improved technology to the industry;

- provides engineering services to other divisions of the department.

2. The Inspection Program:

- administers the fish inspection and fish buyers' regulations.

The activities of the division are organized and conducted under the following program areas.

TECHNOLOGY DEVELOPMENT

Fishing Vessel and Gear

The department entered into a cost-sharing arrangement with an offshore company to develop a refrigerated holding and washing tank for scallop meats. A prototype was developed and tested aboard a company vessel, resulting in a noticeable improvement in scallop quality.

The department contributed technical and financial assistance to an experimental fishery for slime eels (hagfish) in southwest Nova Scotia, which produced positive results. Baited pots were set in specific areas and the eels were brought ashore for market preparation. Slime eel skin is used to produce fine leather.

Nova Scotia Fisheries and the Marine Institute of St. John's, Newfoundland, cooperated on an innovative project involving 10 dragger fishermen, who participated in a four-day workshop, conducted at the Marine Institute. The fishermen attended flume tank demonstrations and classroom sessions to improve their fishing skills.

Another fishing experiment involved the use of feather hooks on longline gear. A similar test in Newfoundland proved to be quite successful; however, the results achieved in the Nova Scotia trial were not promising. Work will continue in this area in 1990–91.

Shore-Based Facilities

Technical staff continued to provide comprehensive guidelines and consultation services on construction practices for many of the shore-based incentive programs such as bait-freezing and storage facilities. On-site supervision by the division's engineers is often necessary, and they are assisted by engineering students hired under employment programs.

Several projects addressed problems in the processing sector. A company was assisted with the development of a handling, packing, and transporting system capable of processing high volumes of herring carcasses for the pet food market in Britain. The market for the pet food product must improve before the company will proceed on a larger commercial scale. The project will be reviewed during 1990–91.

The department collaborated with the Development Branch of the Department of Fisheries and Oceans on an extensive project to develop a silver hake fishery in Nova Scotia. The departments modified fishing gear, developed fish handling techniques, tested specialized processing equipment, and prepared different products for test marketing. Results were promising but several areas require additional work, which is proposed for next year.

A scallop washing machine that uses a compressed air bubbling system was developed. This technique reduced damage to scallops and cleaned them more thoroughly than does the conventional stirring method. The company using the machine is very satisfied with its operation.

Fish Products and Processing

The department continued to test fish silage for use as a soil nutrient at two sites in the Annapolis Valley. Ground fish silage, applied as a top dressing on fields in the Kingston area during August, yielded quality hay crops in late October. At a Centerville site, silage applied during spring ploughing on corn fields returned a fall corn crop comparable to adjacent stands grown with commercial fertilizer.

A joint project with the Canadian Institute of Fisheries Technology to produce silage using dogfish wastes proved successful. Transforming dogfish wastes into silage could be a welcome solution for this by-product since it is unsuitable for making fish meal. Dogfish silage would be used as an organic fertilizer.

Work on value-added processing of dogfish focused on smoked, cured, canned, and vacuum-packed products. Processing demonstrations involving other underutilized species were also conducted at four processing plants using equipment supplied by the department.

The department conducted smoking trials on steelhead salmon at the request of a major grower. Hot- and cold-smoked products using farmed steelhead salmon were produced for market testing. Technical assistance was also provided to a surf clam producer to increase the market potential for clam parts. This included the development of battered, smoked, and canned products.

A low-cost mussel processor has been successfully developed and tested in conjunction with the Agricultural Engineering Department of the Technical University of Nova Scotia. Self-powered and portable, the declusterer is easily handled by one person and can process 50 pounds of mussels in 20 minutes. This machine washes, degrits, declusters, and grades mussels according to size.

FINANCIAL INCENTIVES

Harvesting

During the 1989–90 fiscal year, the department continued to focus on improving life safety and fire fighting equipment aboard inshore vessels. Four hundred applicants were assisted under this program to purchase safety and quality-related equipment: 145 bought approved

inflatable life rafts, 22 bought halon fire fighting systems, and 233 bought insulated polyethylene fish containers.

Onshore Facilities

Harbour infrastructure was upgraded in many parts of Nova Scotia. Three major areas of interest were fishermen's gear sheds, private wharves, and public boat ramps. The department assessed 140 applications; 65 were approved and completed. Technical and financial assistance was provided for 30 private fishing wharves; 19 gear sheds, providing gear and work space for 182 fishermen; and 16 public boat ramps.

About $275,000 was allocated to the private wharf program to cost-share the purchase of construction materials. The wharves were designed and constructed under departmental direction and with the assistance of department technical staff.

The Province provided $305,000 in a cost-sharing arrangement to construct fishermen's gear sheds. These were built as community buildings and divided so individuals could store and maintain their fishing gear.

Public slipways for fishermen and aquaculturists were completed at 16 locations. The slipway program totalled $120,000. Fishermen and fishermen's groups coordinated or constructed the projects; departmental engineers and technicians evaluated the designs and the sites.

Processing

This program area addressed the issues of fish quality and operational efficiency as they pertain to processors, fishermen, and aquaculturists. Projects included refrigerated storage facilities, plant cleaning equipment, and mussel grading machines. Cost-sharing assistance of $487,000 helped 74 applicants.

Funding was provided for 18 bait/trawl freezing facilities. Written guidelines and technical assistance ensured that the buildings were constructed to proper standards.

Cost-sharing assistance allowed 35 processors to purchase steam/high pressure cleaners for cleaning working areas and equipment.

The aquaculture industry is expanding and some operators require mechanical equipment for declumping and grading shellfish products. Seven companies received assistance to purchase these machines.

FISHERIES INSPECTION SERVICES

The department has been taking an increasingly active role in the areas of fish inspection, fish buying, and aquaculture. Under the Nova Scotia Fish Inspection Regulations, regulations respecting the buying and selling of fish, and the Aquaculture Act and Regulations, the department inspected over 150 sites and facilities during the past year. These included licenced fish processing plants, licenced buyers, aquaculturists, and retail establishments who were not in compliance with the acts and regulations.

The Inspection Service focuses primarily on matters directly related to the health and safety of Nova Scotia seafood consumers. Shellfish is particularly important, and the department has established an extensive shellfish sampling program. Inspection staff also monitor the buying activities of various fish dealers in the province and ensure that the aquaculture industry complies with provincial statutes.

During the past year, 357 processing facilities and 389 fish buyers operated under licence. The provincial government announced a moratorium on additional licences in March 1989 and, as a result, the inspection service became involved in administering and enforcing the moratorium.

CANADA – NOVA SCOTIA ECONOMIC REGIONAL DEVELOPMENT AGREEMENT (ERDA)

The Fisheries Subsidiary Agreement between Canada and Nova Scotia was signed in October 1984. The agreement has a total value of $50 million over five years. Federal and provincial expenditures were $35 million and $15 million respectively. The program and budget structure was as follows:

Five-Year Budget (millions of dollars)

Sector	Federal	Provincial
Quality Enhancement	21.0	1.5
Efficiency Improvement	10.5	6.0
Market Improvement	0.5	2.0
Resource Enhancement	1.5	5.0
Public Information, Evaluation, and Administration	1.5	0.5
Total	35.0	15.0

Funding for the agreement was approved in August 1985 in an interim amount of $28.5 million ($20 million federal contribution, $8.5 million provincial) for the fiscal period of 1985–86 to 1988–89. The agreement terminated as of March 31, 1989.

Provincial projects were selected on the basis of the following criteria and order of priority:

1. Development — Generic Projects
These include marketing and aquaculture projects that produce products or processes of benefit to the industry as a whole (e.g., utilization of waste products).

2. Development — Company-Specific Projects
These projects involve research and development that is of primary benefit to a specific company (e.g., a new seafood product).

3. Technology Transfer
Technology developed elsewhere or in another sector is evaluated for use in Nova Scotia's fishing industry.

4. Training Programs
These programs include the cost of providing training for new initiatives (e.g., dockside grading).

5. Public Facilities
This category includes government-owned infrastructures (e.g., hatcheries).

6. Incentive Projects
Cost-sharing grants are given to encourage further use of equipment, facilities, or processes, which have proven effective in achieving specific objectives in the province (e.g., equipment related to quality improvement).

Projects approved but not completed before the agreement terminated had to be finished before March 31, 1990. The provincial budget to complete these projects was $1.5 million; the federal department did not spend any funds during this fiscal year. Projects completed during this last year included:

Efficiency Improvement
Upgrading of navigation training simulator
Private harbour facilities

Market Development
Various loster promotion programs
Underutilized species workshop
Nova Scotia Festival of Food video

Resource Enhancement
Ship Harbour Aquaculture Demonstration Centre
Frasers Mills and McGowan Lake trout hatcheries
Scotia Pride Program
Bacterial kidney disease in salmonids
N.S. Atlantic Salmon Broodstock Development Program
Long-term strategy for sustainable aquaculture development in Nova Scotia
Information programs on aquaculture and inland fisheries
Smallmouth bass fishery development
Adopt-A-Stream programs
Tag return
Current meters
Ship Harbour – Quarantine facilities
Ship Harbour – Research microscope.

FISHERIES LOAN BOARD

During the 1989–90 fiscal year, the Board experienced a dramatic increase in the number of loans approved and a similar increase in rejected applications. As of March 31, 1990, principal arrears amounted to $1,559,898, approximately double that of the previous year. The unsettled and uncertain state of the fishing industry undoubtedly had some bearing on these changes from the previous year even though repayments on loans slightly exceeded projections.

Ten meetings were held during the year, and of the 312 applications considered, 153 were approved, 75 were rejected, one was deferred, and 83 were returned for various reasons. A further eight existing loans were assumed by other applicants.

Gross value represented by approved loans amounted to $13,525,805. After down payments were deducted, net loans amounted to $10,602,707. During the year 125 loans were paid off.

The following table compares Loan Board activity over the past five years:

Year Ending Mar 31	Applications Received	Loans Approved	Net Amount Approved	Number of Loans Outstanding	Amount Outstanding
1986	240	109	$ 6,267,295	1,774	$ 74,068,949
1987	237	105	5,670,410	1,555	62,450,835
1988	362	215	16,863,941	1,454	59,520,867
1989	378	222	16,829,212	1,337	62,833,952
1990	312	153	10,602,707	1,313	61,590,761

In addition to the outstanding loans of $61,590,761 at the end of the year, there were outstanding commitments of $2,891,823. Advances during the year amounted to $8,299,926, and $9,550,793 was received in repayments on principal. A further $5,332,436 was received on interest. Write-offs amounted to $46,645.08.

A breakdown of the types of loans approved is as follows:

	No.	Amount
New boats to 39'11"	52	$ 2,724,947.97
New boats 40' – 43'11"	17	1,318,220.65
New boats 44' – 44'11"	5	1,274,234.40
New boats 45' – 64'11"	8	3,270,608.00
Used boats to 39'11"	16	519,816.00
Used boats 40' – 43'	7	441,600.00
Diesel Engines	22	386,816.10
Gas Engines	1	3,276.00
Equipment	12	115,094.76
Upgrading	6	131,460.00
Aquaculture	7	416,632.98
	153	**$10,602,706.86**

Loans approved, by county, were as follows:

Annapolis	5	$ 1,998,400.00
Antigonish	9	88,217.40
Cape Breton	12	744,788.60
Colchester	1	12,000.00
Cumberland	4	210,528.00
Digby	8	865,812.00
Guysborough	2	53,428.00
Halifax	23	940,290.74
Inverness	10	225,556.50
Kings	1	12,528.00
Lunenburg	6	456,420.41
Pictou	6	175,423.81
Queens	2	84,400.00
Richmond	3	125,621.60
Shelburne	19	1,850,826.40
Victoria	18	606,837.60
Yarmouth	25	2,151,627.80
	153	**$10,602,706.86**

During the year 23 loans, totalling $1,067,523, were cancelled.

TECHNICAL AND INSPECTION SERVICES

During the year under review, 77 boats were completed with Loan Board financing. Technical services were provided during the prelimi-

nary planning and construction stages of these boats. Progress inspections made by vessel inspectors numbered 293 on 118 boats. At the end of the fiscal year, 15 of these boats were at various stages of construction and subject to further inspection. Also, 66 used boats were inspected; 67 boats were inspected for engines, equipment, and upgrading loans; and 748 boats were inspected for maintenance and housekeeping. Fourteen sea trials were held. Ten boat shops and eight new molds were added to the Board's approved list. In addition, technical personnel attended various meetings within the Maritimes to discuss vessel regulations and specification requirements.

TRAINING AND FIELD SERVICES

TRAINING

There continues to be a strong demand for courses in net and gear technology, engineering, navigation, and safety. The demand for the programs comes from both the inshore and offshore fleets. The programs for the offshore fleets mainly comprise navigation and engineering courses, which prepare the candidates to write for Transport Canada Certification at Fishing Master I and II levels and Engineer Class III. While there is no regulation for transport certification within the inshore fleet, there is considerable interest in the safety and navigation training programs that lead to Fishing Master III and IV certificates.

The training programs were conducted at the School of Fisheries, Pictou, and in 50 locations throughout the province.

A summary of the training offered by the Training and Field Services Division is as follows:

	Inshore	Offshore	Processing
Navigation	Small Craft Master Fishing Master Class IV	Fishing Master I Fishing Master II Fishing Master III	
Engineering	Small Gas & Diesel Diesel Engines Hydraulics	Watchkeeping Engineer Fishing Vessel Chief Engineer Fourth Class Engineer	Refrigeration for: Small Plant Operator Assistant to Plant Engineer
Fishing Gear Technology	Basic Skills in Repair and Construction Advanced Construction & Maintenance	Deckhand Trawlerman	
Safety	Marine Emergency Duties A2 Fire Fighting Life Saving, Survival First Aid	Marine Emergency Duties B1 & B2 Life Saving, Survival First Aid	
Small Business Management	Family Business Recordkeeping Taxation Financial Decision Making		Small Plant Operator Recordkeeping Finance Management

Aquaculture	Business Plans Site Selecting Shell Fish Farming Fin Fish Farming		
Quality Control	Care of Catch Dockside Grading	Care of Catch	Quality Management
Advisory Services	Fishing Gear & Engineering	Design of Special Programs	Design of Special Programs

Nova Scotia School of Fisheries

The programs at the Nova Scotia School of Fisheries are designed to meet the demands of the offshore fleet. The school serves the local area and is used for custom-designed programs for clients from other government agencies and areas of Canada.

Nova Scotia — Offshore Programs

Course	Number held	Students Completed
Navigation	5	43
Marine Emergency Duties (MED)	5	43
Chief Engineer	1	10
Radio Telephone	5	43
3rd Class Engineer	1	8

Transport Canada Certification Programs: School and Extension

Course	Number held	No. of Fishermen Passed
Fishing Master Class I	1	9
Fishing Master Class II	1	10
Fishing Master Class III	5	60
Fishing Master Class IV	11	143

Marine Emergency Duties (MED)	11	143
Fishing Vessel Chief Engineer	1	10
F/M Class IV Phase I	14	171
F/M Class IV Phase II	2	24
3rd Class Engineer	1	8

Extension Programs in Fishing Communities

The Extension Programs are designed primarily to meet the training needs of the inshore harvesting sector. The department's fishery representatives and Canada Manpower officials help plan and coordinate these programs in the fishing communities. Partial funding, for the courses at the school and for the extension programs, is provided through Canada Employment and Immigration training funds.

A strong emphasis has been, and continues to be, placed on safety programs, which include:

- First Aid
- Firefighting
- Life Saving and Survival
- Use of Survival Suits and Life Rafts
- Distress Signals

The following communities were served with training programs in 1989–1990:

Drumhead
Terence Bay
Church Point
Bay St. Lawrence
Pubnico
Sheet Harbour
Barrington
Westport
Breton Cove
Jeddore
Point Aconi
Sherbrooke
Big Bras d'Or
Louisbourg
Englishtown
Wedgeport
Northport
Glace Bay
Mabou
North Sydney
Tracadie
Shelburne
Daysprings
Pugwash
Port Morien
Cheticamp
Annapolis Royal
Yarmouth
Boylston
Prospect
Chezzetcook

The breakdown of the training programs conducted in these fishing communities is as follow:

	No. of Courses Courses	Students Completed
Fishing Master Class IV	15	194
Fishing Master Class III	3	36
F/M Class IV—Phase I Loran "C"	15	180
Inshore Fishing Operations	8	97
Marine Emergency Duties (MED)	15	194
Small Business Management	6	72
Deckhand/Trawlerman	6	74
Radio Telephone	15	194
First Aid	15	194

Contract Training

The department entered into training contracts with the Department of Fisheries and Oceans, Canadian Wildlife Services, Canadian International Development Agency (CIDA), and the International Centre for Ocean Development (ICOD).

The programs are designed to meet the specific needs of each agency.

	No. of Courses	No. of Students	Duration
Department of Fisheries and Oceans			
MED	2	12	5 days
Canadian Wildlife Service			
Navigation	1	23	6 days
International Centre for Ocean Development (ICOD)			
Gill Net Construction & Repair			
Longlining			
Outboard Engine—Maintenance & Repair			
Small Boat Safety & Navigation			
Recordkeeping			
Fisheries Co-operatives			
Train-the-trainer	1	19	30 days

Canadian International Development Agency (CIDA)			
same program as ICOD	1	27	30 days

The ICOD and CIDA programs were designed for fishermen from Grenada, St. Vincent, Antigua/Barbuda, British Virgin Islands, St.Kitts, Nevis, and Dominica.

Aquaculture

Training programs were developed for aquaculture operators; however, due to a lack of demand, no courses were conducted. Four 12-week courses will be offered in 1989–90 through Canada Employment and Immigration (CEIC) funding.

High Schools

A one-day Safety At Sea Program has been designed and implemented for young people planning to work part time on fishing vessels. The program, designed by the school staff, has been accepted by Transport Canada and distributed to marine and fisheries training institutes in Newfoundland, New Brunswick, and Prince Edward Island.

The initial programs were conducted in southwest Nova Scotia and are available on request to all high schools.

FIELD SERVICE

The fisheries representatives serve fishing communities and industry throughout the province by providing information and monitoring the service of government programs in the areas of industrial development, Loan Board, aquaculture, marketing, and training.

Training programs for Nova Scotia fishermen at the Fisheries School in Pictou and in fishing communities throughout the province were coordinated by the Field Service and Administration staff. The Field Service Division worked with Transport Canada and the Canada Employment and Immigration Commission to process documents related to training and to arrange instruction facilities. The division also played a major role in the selection of students.

Applications to the Industrial Development Division for assistance, described at the beginning of this report, were taken by the fisheries representatives and rated according to impact and priority in the industry. Representatives handled several hundred applications and monitored progress on approved projects.

The Field Service completed confidential reports on loan applications for the Fisheries Loan Board. Fishermen were assisted in finding boat builders or used boats. Representatives also supplied financial advice and additional loan information. Fishermen were also encouraged to bring their loans up to date.

Increased emphasis was placed on aquaculture. Both finfish and shellfish rearing are expected to receive more attention in the future as the Aquaculture Act and Regulations are promoted and enforced.

The fisheries representatives continued to service the fishing industry through monitoring and reporting on the wide range of programs and services of the Department of Fisheries and Oceans. In addition, the representatives are involved with Transport Canada on navigational aids and fishermen's certification papers; with the Department of the Environment on dump sites; with the Department of Lands and Forests on land use; with the Canadian Employment and Immigration Commission on training registration and student selection; and with the Department of Communications on radio licences.

A key responsibility for all fishery representatives is to inform fishermen and processors in their region about the various government regulations, programs, and services. In carrying out this function, fishery representatives attend meetings of fishermen groups and deal with individual fishermen.

MARINE RESOURCES DIVISION

The Marine Resources Division represents the department and the Nova Scotia fishing industry on numerous government/industry advisory committees. Its function is to ensure that the needs of the industry are adequately considered in the development and implementation of management plans for the various fisheries in which provincial fishermen participate.

This year the division was represented on over 50 advisory committees dealing with groundfish, pelagics, scallops, marine plants, clams, and crustaceans. The division served in an advisory capacity on many fisheries bilateral agreement discussions with foreign nations.

The division also represented the department on several government committees dealing with the proposed fixed link across the Northumberland Strait, as well as on committees dealing with the review of offshore oil and gas exploration and development proposals.

During the year, the division participated with the working group that laid the groundwork for the establishment of the Gulf of Maine Council on the Marine Environment. Nova Scotia, along with representatives from New Brunswick, Maine, Massachusetts, and New Hampshire, have joined in a cooperative effort to protect the ecological integrity of the Gulf of Maine for the benefit of all those dependent on its continued good health. A report entitled "Sustaining Our Common Heritage" was produced, and the department participated in a conference that culminated in the signing of an agreement by the governors and premiers of the states and provinces involved. The ministers of Fisheries and of the Environment for Nova Scotia have been appointed to the Council. The Marine Resources Division will continue to serve on the working group.

RESOURCE MANAGEMENT AND RESEARCH

The Resource Management and Research section of the division is divided into three units, each dealing with a species group: groundfish, invertebrates, and pelagic fish. A marine advisor heads each of the units and is responsible for providing expertise concerning management of the resource. The marine advisors for the invertebrate and pelagic species are also involved in research programs aimed at investigating species and stocks of specific interest to Nova Scotia. These studies are important for improving management and for devel-

oping future fisheries. The programs involve considerable field work, for which students are employed. Details of these studies are described below.

Invertebrates

In 1989, the division participated in programs designed to collect information on lobster and crabs in fishing ports around the province. Biological data on size frequencies, catch effort, and reproductive potentials were gathered and will be used to assess the fisheries as they exist and to project how they may be developed in the future. Division staff focused on lobster area 26 (formerly district 7bl.), initiating a program aimed at increasing the lobster size. The legal size of lobster in Inverness County is being increased from 2.5 to 2.75 inches. This change is expected to increase the yield from the local fishery and potentially increase recruitment. Throughout the years, the department has encouraged and supported fishermen by providing new lobster measures and assessing the impact of such changes on the lobster fishery. The division continued to work with the Department of Fisheries and Oceans on lobster tagging studies to assess the growth and movement of lobsters in the experimental area.

Pelagic Fish

Departmental studies on the gaspereau stock in the Pictou Harbour region have provided biological information on the effects of habitat alteration on gaspereau production. In 1989, the gaspereau population was assessed using data on the composition of the species, size and age frequency, and the movement of spawning fish into the Middle River Reservoir. The early life history of gaspereau was investigated through samplings showing the density, distribution, and growth of larvae and juveniles. Seasonal plankton production in the reservoir was also examined. The largest gaspereau fishery in Nova Scotia is in the Southwest Margaree River. Lake Ainslie is the site for spawning and larval fish development. Larval fish surveys were conducted to estimate spawning stock size and to forecast recruitment into the fishery. The larval gaspereau production was also assessed relative to biotic and abiotic factors.

AQUACULTURE AND INLAND FISHERIES

This division is responsible for the planning, implementation, and administration of policies and programs aimed at conserving and enhancing the fisheries resource where land and water meet. The following are its major responsibilities:

1) Administration of the Aquaculture Act and Regulations, under which aquaculture licences and leases are issued, and of the Federal–Provincial Agreement on Aquaculture Development, which provides for coordination of departmental responsibilities and programs for the orderly development of this resource sector. A Federal–Provincial Industry Sector Committee, composed of representatives from all regions, species culture sectors, and the Aquaculture Association of Nova Scotia, assists the two levels of government by providing advice and by developing a long-term aquaculture Development Plan for the province's aquaculture research sector.

2) Management of the recreational trout fishery. This includes producing and distributing about 753,000 trout to 392 rural and urban lakes across the province; conducting lake and stream surveys and creel censi; and other field and extension work that supports the conservation and enhancement of the recreational trout fishery.

3) Providing departmental advice and technical expertise to provincial and federal agencies, intergovernmental committees, and the public involved in the management of the resource base in the coastal zone.

4) Directing and conducting applied research and development projects that support aquaculture development. These initiatives are carried out through the Canada – Nova Scotia ERDA.

5) Providing extension services to the public in the aquaculture and inland fisheries resource sectors through resource material, demonstration sites, on-site project evaluations, and public seminars and workshops.

The divisional headquarters are maintained at the Fisheries School in Pictou, while the Aquaculture Coordinator together with the licencing and leasing administration staff are based in Halifax. Re-

gional operational facilities include an experimental shellfish hatchery and culture demonstration site at Ship Harbour (Halifax County) and trout production facilities at Frasers Mills (Antigonish County) and McGowan Lake (Queens County).

AQUACULTURE LEASES AND LICENCES

This section is responsible for issuing aquaculture leases and licences in the province. It provides a "one-stop" service for aquaculture applicants, in that, all comments and approvals required from other provincial and federal departments relating to such applications are coordinated through this office.

This year the division received 44 new applications for aquaculture leases, licences, and experimental permits. Of these, 20 were for shellfish production and 24 for finfish production. Initial water quality analyses were conducted in 13 areas.

The section also provides field and extension support to people applying for aquaculture licences and leases, as well as to operators. Services include site evaluations, water quality surveys, technical advice on culture methods, and the provision and sale of hatchery finfish and shellfish stock for start-up operations.

Staff conducted preliminary site inspections, provided technical advice and information, participated in aquaculture technology transfers, and moored temperature recorders in several key areas to monitor 1989–90 winter conditions.

Aquaculture operations reported total production sales of $2,949,094 and employment figures of 301 full-time and part-time jobs.

Shellfish Aquaculture Development

Research and development aimed at improving molluscan shellfish hatchery production techniques continued at the Ship Harbour Aquaculture Demonstration Centre, which opened in September 1989. The new facility houses a quarantine section that will allow staff to evaluate the aquaculture potential of non-native species. One such species is the Icelandic Cockle, which was held in quarantine at DFO and the Ship Harbour facilities for evaluation.

Other research activities involved investigation of hatchery and nursery methods, testing of certain species under winter conditions, research of new species for aquaculture applications, and broodstock management.

A total of 100,000 native oysters and 200,000 bar clams, produced at the hatchery, were sold to commercial growers in the province. Other activities included the promotion of aquaculture development through seminars and workshops held throughout the province and a joint project with Environment Canada to classify shellfish growing areas.

A brochure was produced on the Ship Harbour Aquaculture Demonstration Centre and is available to the public upon request.

Finfish Aquaculture Development

In providing extension services to finfish aquaculturists, departmental staff visited 85 sites between April and December 1989. A number of emergency visits were made in response to aquaculture fishkills, primarily during the summer.

Staff responded to several hundred inquiries for information on aquaculture. An extensive resource library has been established in the Pictou office and material is available to the aquaculture industry on a loan basis. Staff continued to revise the content of the extension service profile, which currently contains 22 documents available free of charge to aquaculturists and the public.

The department again offered its salmonid broodstock spawning service to the aquaculture industry. Approximately 200,000 Atlantic salmon eggs went through the Frasers Mills facility under this program during the year.

As the industry matures, it becomes more self-reliant in the production of seedstock. The department's role in this area has been relegated to securing quality rainbow trout eggs from out-of-province sources, a portion of which have been made available to the industry.

Finfish aquaculture activity has increased steadily in the province, placing an increased demand on the department's extension services. The industry is expected to continue growing in the immediate future.

INLAND FISHERIES

Production and Distribution

Hatchery production has stabilized since the addition of the McGowan Lake facility in 1988. In an effort to better serve the diverse recreational fisheries throughout the province, the two provincial hatcheries have been diversifying their products, with special emphasis being given to seatrout, brown trout, and a number of varieties of wild and hybrid brook trout.

Recreational Fisheries Management

A breakdown of departmental activities for the recreational fishery during 1989–90 is as follows:

Over 390 lakes were stocked, 182 as part of the department's Urban Angling Program, and 210 as part of the Wild Replenishment Program. The number of stocked lakes increased by 28 per cent over 1989 and the quantity of fish placed in these lakes increased by 10 per cent for a total of 795,000 fish.

About 325,000 fish were used in the Urban Angling Program and 470,000 fish were used in the Wild Replenishment Program. Some 31,400 rainbow trout were placed in provincial lakes. Due to short-term problems in securing broodstock, a temporary decline in the seatrout program resulted in only 1,300 searun speckled trout being released during this period.

A breakdown of the stocking activity, by hatchery, is as follows:

	Spring	Fall	1989 Total
Frasers Mills			
Speckled	133,268	158,310	291,578
Seatrout		500	500
Rainbow	29,658		29,658
Brown	1,500		1,500
McGowan Lake			
Speckled	170,920	257,000	427,920
Seatrout		700	700
Rainbow	1,715		1,715
Total	337,061	416,510	753,571

The division continued to work closely with many local fish and game clubs throughout the province. About 40,000 speckled trout hybrid eggs were supplied to volunteers for planting in artificial redds (nests). As well, 275,000 hybrid speckled trout swim-up fry (juveniles) were reared in streamside incubation units for stream enhancement work. The department expects to continue this successful cooperative work with these organizations.

In 1989, 37,500 catch-size trout were supplied to 29 fishing derbies. Requests for fish for such sporting events are increasing and it has become necessary to impose restrictions on the timing of the events. The trout used in the derbies are part of the Urban Angling Program and the public is permitted to fish on these lakes at any time during the fishing season.

Adopt-A-Stream Program

This program involved 14 public groups during the 1989–90 period. Site visits were conducted for 12 groups, and oral presentations were given to interested groups around the province.

Publications

New publications available through Aquaculture and Inland Services Division are:

- Report #21
  Adequacy of Effluent Treatment Facilities—Sugarloaf Fish Farms, Williamsdale, Nova Scotia
  By UMA Engineering Ltd, October 1989

- Report # 22
  The Effects of Limestone Gravel Application to Two Acidic Nova Scotia Streams
  By Heather Mayhew, March 1989

- Report # 23
  Progress Report for Adopt-A-Stream Program 1988 & 1989
  By Lewis Hinks

- Report # 24
  Smallmouth Bass in Nova Scotia — Biology and Options for Management
  By Andrew Hebda, Gwyneth Jones and Lewis Hinks, March 1990

MARKETING

The Marketing Division provides a wide range of services to the fishing industry, the seafood retail sector, the foodservice industry and the general public. Support services offered by the division are aimed at promoting seafood to improve sales in local, national, and international markets.

MARKET DEVELOPMENT AND PROMOTION

General

The aim of this service is to provide comprehensive and timely information to the Nova Scotia fishing industry on seafood market opportunities worldwide and to ensure that information on Nova Scotia seafood exporters and products is available internationally. Staff also assist in the promotion of Nova Scotia seafood within and outside the province. During the year, the Marketing Division responded to 1,800 requests for information on seafood suppliers and products.

Trade Issues

Staff provided input and background papers on issues concerning the European Economic Community (EEC) tariff structure, the Multi-level Trade Negotiations (MTN) discussions, and the FTA panel on the lobster carapace size restrictions. Position papers were prepared in conjunction with other provincial departments. The division monitored developments in trade actions by the United States against seafood products, as well as regulatory changes related to customs and inspections.

Seafood Publications

New consumer promotional materials were developed for June Seafood Month. These, together with other promotional materials, were distributed to consumers, educators, retailers, and foodservice operators throughout Canada and the United States. The materials are provided in quantity to Nova Scotia seafood retailers and wholesalers to support their sales efforts. About 370,000 recipe pamphlets, posters, and kits were distributed.

The Directory of Nova Scotia Fish Products and the Retail Outlets pamphlet are updated every second year. The directory is a buyer's

guide for seafood produced in the province and is distributed internationally. About 2,500 directories were distributed to members of the seafood trade via overseas Canadian offices, trade shows, and direct mailings. The Retail Outlets pamphlet lists the many outlets within the province where consumers can purchase fresh and frozen seafood.

Seafood Trade Shows

The Marketing Division participated in three seafood shows in the United States: Boston Seafood Show, Sea Fare in Los Angeles, and the New York Seafood Show. The Nova Scotia booth provides information on the quality and types of seafood produced in the province, and on suppliers of these products. Provincial staff assisted Nova Scotia exhibitors by helping them with the design and set-up of their booths and providing booth hardware and samplings of Nova Scotia seafood products. Two departmental seafood consultants also assisted these companies on an individual basis. The number of exhibitors at the Boston Seafood Show has increased considerably. The show offers favorable opportunities to make contacts with major American markets, along with key markets in Europe and the Pacific rim.

Promotions — In-Province

The province conducted seafood cooking demonstrations at exhibitions, shopping malls and consumer shows, including the Atlantic Winter Fair, Food Fair Atlantic, Cape Breton Fall Food Festival, and Swing Into Spring. These promotions are aimed at increasing consumer awareness of Nova Scotia seafood. An extensive summer barbecue program was carried out across the province focusing on underutilized species.

The electronic and print media also proved valuable for disseminating seafood information, especially through radio shows and the publication of articles and seafood recipes. To influence the young consumer and to promote health and fitness, staff developed a Nutrition Month program for the metro area.

Retailing workshops were also conducted for major supermarket chains planning to expand their seafood merchandising effort.

June Seafood Month

June was chosen for special promotional activities because seafood is readily available and reasonably priced at this time of the year. Retailers and foodservice operators favor the summer for emphasizing seafood.

For the second year, promotions for Seafood Month were launched with a competition for the Best Maritime Seafood Basket. The event was held at the Nova Scotia Tourist Information Bureau at the New Brunswick border and featured competitors from each of the Maritime Provinces. Other activities included sporting events, the CBC Information Morning Birthday Party, radio interviews, and seafood demonstrations.

Training

This ongoing program, which informs food sales staff about Nova Scotia seafood and how to increase sales and profits at the seafood counter, was offered to retail stores during 1989–90.

A training program for kitchen staff of institutions focused on improved techniques for preparing large quantities of food.

Information sessions were held to promote individual fish and shellfish species with groups such as the Canadian Club Managers.

FINANCE AND ADMINISTRATION DIVISION

This division provides administrative support to the department including financial, personnel, and office services. Planning, economic, statistical, data processing, and communications services are also provided as required.

Communications Services

The division, through its communications and public/media relations services, is responsible for the development, publication, and distribution of the department's annual report and of educational and promotional material. It is also involved with the preparation and distribution of news releases and media stories and the organization of media and promotional events. The division also coordinates departmental representation at fisheries exhibitions and trade shows.

Public/ Media Relations

During 1989, Communications Services distributed some 250 information packages containing printed and audio-visual material on the commercial and recreational fisheries. While information requests come from across Canada and abroad, many inquiries were from provincial libraries, teachers, and students enrolled in the Maritime Studies Program.

Communications Services also collaborated with the Marketing Division on June Seafood Month promotions, coordinated the official opening of the Aquaculture Demonstration Centre in Ship Harbour, and assisted other divisions with public relations needs as required.

Fishery Exhibitions

During the year, the department was represented at the Nova Scotia Fisheries Exhibition in Lunenburg. In conjunction with the Department of Industry, Trade and Technology, the department participated in the second International Fisheries Equipment Exposition in Halifax.

Publications

The following publications were completed by Communications Services during 1989:

• *Know Your Trout*, an in-depth look at Nova Scotia's most popular sportfish. While the booklet is appropriate for all age groups, it should prove to be a valuable source of information for children aged 10 to 18.

• *Sensitive Habitats*, a series of four booklets on freshwater habitats and environmental concerns facing the animal and plant life in these habitats. Three booklets were completed in 1989: *Sensitive Habitats: Small Streams, Sensitive Habitats: Rivers, and Sensitive Habitats: Lakes*. The publications are aimed at a general reading audience but school age children should find them particularly interesting.

• Brochure on the Aquaculture Demonstration Centre, located at Ship Harbour.

Administrative Information and Control Systems

The department's Long Range Systems Plan, covering the next five years, was updated and sent to Management Board. At year end, Management Board had not yet responded.

Minor alterations and enhancements continue to be made to the Fisheries Loans System, now residing on the IBM mainframe at the Provincial Data Centre. Efforts during the fiscal year have been successful in keeping monthly charges from the Department of Government Services at existing levels, while permitting improvements, maintaining integrity of the database, and retaining the flexibility of the system.

Hardware for the Incentive Grants system and the Training system was installed and the database systems were prepared, installed, and tested during the year. With the exception of various reporting modules, these two systems were completed. In addition, hardware was obtained for the Fisheries Training Centre in Pictou to permit the data transfer of Transport Canada certification examinations from Ottawa. In addition, the system will be used to assist the Centre in teaching various navigation courses and fishing techniques through existing software packages.

Weatheradio Canada

Through a cost-sharing agreement with Environment Canada, the department continues to fund a Marine and Public Weather Information Service. Providing essential weather information to fishermen and other interested members of the public, a series of VHF radio stations in Nova Scotia and Prince Edward Island participate in this highly successful initiative.

STATISTICAL REVIEW

Fisheries production statistics, as provided in this report for the calendar year 1989, are revised figures supplied by the federal Department of Fisheries and Oceans. They may be subject to minor adjustments as late returns from firms and individuals are received and processed in that department.

TABLE I
Major Species Landings Yielding over $1 million Annually

Species	Landings (Metric Tons) 1989	1988	Value ($000) 1989	1988
1. Lobster	19,086	18,602	138,884	141,124
2. Scallops	79,963	68,325	79,268	73,942
3. Cod	122,958	129,931	77,997	81,883
4. Haddock	22,283	25,528	23,972	26,323
5. Pollock	39,890	40,087	18,206	13,966
6. Flounder	14,141	14,617	14,177	13,768
7. Shrimp	4,946	2,682	12,572	8,531
8. Herring	84,214	124,178	12,360	20,603
9. Redfish	31,313	32,839	9,437	12,173
10. Halibut	1,882	2,096	8,736	9,614
11. Clams	10,132	4,167	7,478	4,149
12. Swordfish	1,239	972	7,216	6,041
13. Tuna	517	346	5,890	3,450
14. Crabs	2,884	3,075	5,348	9,241
15. Hake	10,323	9,783	5,287	3,684
16. Alewives	5,019	5,217	2,573	2,090
17. Marine Plants	28,025	23,939	2,459	945
18. Cusk	3,402	2,935	1,836	1,454
19. Mackerel	5,229	6,451	1,683	2,247
20. Monkfish	1,775	1,438	1,456	1,190

TABLE II
Nova Scotia Fisheries
Landed and Marketed Value
1955–1989

Year	Landed Value ($000)	Marketed Value ($000)
1955	23,582	47,093
1960	26,094	51,753
1965	49,371	93,443
1970	55,652	105,939
1975	91,010	208,574
1980	230,911	438,799
1981	263,727	484,182
1982	259,411	523,191
1983	276,451	497,664
1984	265,335	533,500
1985	312,733	562,919
1986	423,973	805,548
1987	524,147	995,800
1988	439,082	834,255
1989	438,426	833,009[a]

[a]This is an estimate based upon recent average past relationships between landed and marketed values.

TABLE III
Nova Scotia Fisheries
Landings and Landed Value
by Species Group

Group	Landings (Metric Tons)		Value ($000)	
	1989	1988	1989	1988
Groundfish	249,708	260,837	161,781	164,637
Pelagic & Estuarial	96,647	137,574	30,129	35,367
Molluscs & Crustaceans	117,197	97,128	243,901	237,448
Miscellaneous	28,159	26,827	2,615	1,630
Total	491,711	522,366	438,426	439,082

TABLE IV
Landed Value of Fisheries by County

County [a]	Landed Value [b] ($000) 1989	1988	Change (Per cent) 1988–89
Shelburne	83,061	84,806	– 2
Lunenburg	67,549	67,771	0
Yarmouth	62,877	61,409	+ 2
Digby	52,880	55,547	– 5
Cape Breton	40,538	43,575	– 7
Guysborough	36,518	32,155	+ 14
Halifax	25,390	16,408	+ 55
Inverness	18,470	20,596	– 10
Victoria	11,046	12,081	– 9
Queens	8,829	13,073	– 32
Richmond	8,222	7,118	+ 16
Pictou	7,865	9,390	– 16
Antigonish	5,316	4,875	+ 9
Cumberland	4,620	6,247	– 26
Kings	2,072	908	+128
Annapolis	1,854	1,690	+ 10
Colchester	1,220	1,311	– 7
Hants	99	122	– 19
Total	438,426	439,082	0

[a] Counties are in order of the 1989 landed value.

[b] Landed value includes groundfish, pelagic and estuarial, molluscs and crustaceans, viscera, seaweed, and other.

Table V
Total Landed Weight of Fisheries by County

County [a]	Landed Weight [b] (Metric Tons) 1989	1988	Change (Per cent) 1988–89
Lunenburg	90,188	88,588	+ 2
Yarmouth	79,798	94,373	– 15
Shelburne	66,431	76,952	– 14
Guysborough	61,930	56,842	+ 9
Digby	55,830	69,240	– 19
Cape Breton	50,977	53,095	– 4
Inverness	20,037	19,665	+ 2
Halifax	19,800	12,277	+ 61
Richmond	14,852	13,852	+ 7
Victoria	8,013	8,275	– 3
Queens	7,912	12,054	– 34
Pictou	5,531	10,010	– 45
Annapolis	3,609	1,437	+151
Kings	2,245	499	+350
Antigonish	1,996	2,661	– 25
Cumberland	1,545	1,515	+ 2
Colchester	915	900	+ 2
Hants	102	131	– 22
Total	491,711	522,366	– 6

[a] Counties are in order of the 1989 landed weight.

[b] Landed weight includes groundfish, pelagic and estuarial, molluscs and crustaceans, viscera, seaweed and other.

TABLE VI
Landed Weight and Landed Value of Fisheries by Species Group by County (1989–1990)

County	Species Group	Landed Weight (Metric Tons) 1989	1988	Landed Value ($000) 1989	1988
Annapolis	Groundfish	102	153	92	127
	Pelagic	2	–	–	–
	Shellfish	1,013	880	1,616	1,550
	Other	2,492	403	146	13
Antigonish	Groundfish	979	482	436	217
	Pelagic	328	1,382	1,183	467
	Shellfish	689	797	3,697	4,189
	Other	–	–	–	–
Cape Breton	Groundfish	42,680	42,451	22,266	24,235
	Pelagic	2,405	3,634	526	618
	Shellfish	5,889	7,009	17,736	18,718
	Other	3	1	11	4
Colchester	Groundfish	10	14	11	16
	Pelagic	38	57	25	88
	Shellfish	867	829	1,184	1,207
	Other	–	–	–	–
Cumberland	Groundfish	17	–	10	–
	Pelagic	267	84	98	65
	Shellfish	1,261	1,431	4,512	6,182
	Other	–	–	–	–
Digby	Groundfish	10,320	16,035	8,572	11,223
	Pelagic	9,341	19,991	1,539	3,411
	Shellfish	34,567	29,488	42,661	40,787
	Other	1,602	3,727	108	125
Guysborough	Groundfish	41,471	44,305	19,440	19,945
	Pelagic	10,315	9,220	1,599	1,577
	Shellfish	10,144	3,318	15,479	10,632
	Other	–	–	–	–

TABLE VI, Continued

County	Species Group	Landed Weight (Metric Tons) 1989	1988	Landed Value ($000) 1989	1988
Halifax	Groundfish	16,032	9,844	16,055	9,906
	Pelagic	1,649	1,458	2,271	2,189
	Shellfish	2,119	969	7,064	4,314
	Other	–	–	–	–
Hants	Groundfish	6	8	7	9
	Pelagic	90	120	86	109
	Shellfish	6	3	6	4
	Other	–	–	–	–
Inverness	Groundfish	14,975	13,262	7,548	5,790
	Pelagic	1,912	3,204	969	1,621
	Shellfish	3,150	3,199	9,953	13,185
	Other	–	–	–	–
Kings	Groundfish	135	287	182	392
	Pelagic	1,965	143	1,352	86
	Shellfish	143	69	532	429
	Other	2	–	6	–
Lunenburg	Groundfish	50,403	53,553	26,150	28,676
	Pelagic	1,833	3,226	487	1,120
	Shellfish	37,952	31,808	40,908	37,973
	Other	–	2	4	2
Pictou	Groundfish	133	111	60	58
	Pelagic	3,466	8,257	428	1,527
	Shellfish	1,443	1,536	7,291	7,788
	Other	489	106	86	19
Queens	Groundfish	4,803	7,286	3,421	5,689
	Pelagic	181	1,436	78	527
	Shellfish	2,928	3,332	5,330	6,857
	Other	–	–	–	–

TABLE Vi, Continued

County	Species Group	Landed Weight (Metric Tons) 1989	1988	Landed Value ($000) 1989	1988
Richmond	Groundfish	14,219	12,746	5,842	4,740
	Pelagic	178	736	52	265
	Shellfish	455	370	2,328	2,113
	Other	–	–	–	–
Shelburne	Groundfish	38,087	42,392	39,224	40,201
	Pelagic	9,415	14,077	9,570	8,589
	Shellfish	3,954	4,139	32,849	34,933
	Other	14,975	16,346	1,418	1,083
Victoria	Groundfish	4,370	4,496	2,961	3,020
	Pelagic	1,975	2,269	514	861
	Shellfish	1,668	1,509	7,570	8,201
	Other	–	–	–	–
Yarmouth	Groundfish	10,966	13,412	9,505	10,393
	Pelagic	51,287	68,280	9,351	12,247
	Shellfish	8,949	6,442	43,185	38,386
	Other	8,596	6,242	836	384

"Pelagic" includes pelagic and estuarial.
"Shellfish" includes molluscs and crustaceans.
"Other" includes livers, tongues, scales, roe and oil, sea plants,mammals, worms.

TABLE VII
Comparative Landings and Landed Values Among Selected Provinces in Order of Landed Value — 1989

Province	Landed Weight (metric tons)	Landed Value ($000)
Nova Scotia	491,711	$438,426
British Columbia	265,441	$389,036
Newfoundland	505,660	$246,387
New Brunswick	165,249	$102,533
Prince Edward Island	56,298	$ 67,619

TABLE VIII
Nova Scotia Fishery Profile

Employment (1989–90)

Fishermen	16,027
Plant Workers — yearly average	7,325
Registered fish processing establishments	346

The Nova Scotia Fishing Fleet — by Size and Vessel Categories(1989–90)

Inshore Fleet (Length/ft)	**Number of Boats**
Less than 20'	975
20' – 24.9'	399
25' – 29.9' & 30' – 34.9'	1,669
35' – 39.9'	1,039
40' – 44.9'	817
Total	4,899
Nearshore Fleet (Length/ft)	
45' – 49.9'	29
50' – 54.9'	23
55' – 59.9'	41
60' – 64.9'	125
Total	218
Offshore Fleet (Length/ft)	
65' – 89.9'	8
90' – 99.9'	33
100' – 124.9'	50
125' – 149.9'	21
150'+	24
Total	136
Total of Boats All Sizes	5,253

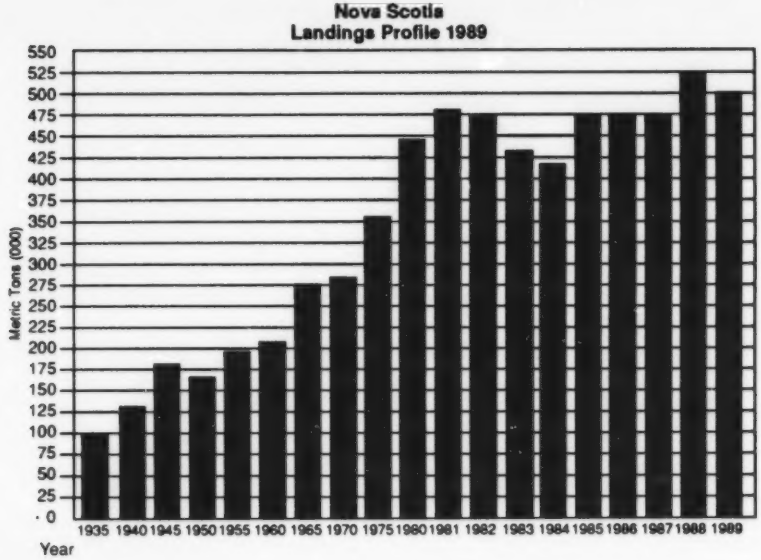
DEPARTMENT OF FISHERIES
ORDINARY EXPENDITURES

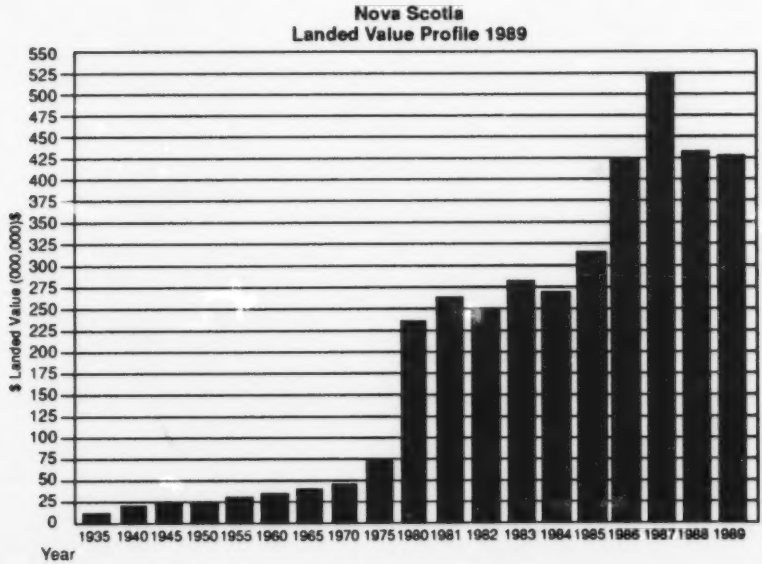
Fiscal Year Ending March 31	Total Ordinary Expenditure
1965	$ 230,787
1966	340,653
1967	321,742
1968	530,166
1969	412,577
1970	458,034
1971	1,020,778
1972	1,373,784
1973	908,457
1974	3,138,359[a]
1975	1,088,534
1976	661,763
1977	2,350,456
1978	3,149,131
1979	5,377,213
1980	5,841,649
1981	11,047,135[b]
1982	13,758,223
1983	12,642,688
1984	10,891,506
1985	11,496,630
1986	9,482,968
1987	7,964,297
1988	8,926,000
1989	9,207,436
1990	6,665,026[c]

[a]More than $2 million was spent in the form of special assistance to help the industry recover from a storm in June 1973.

[b]Beginning in 1981, capital advance interest charges for the Fisheries Loan Board are included in the Department of Fisheries estimates. These charges were previously accounted for under Department of Finance estimates.

[c]For the fiscal year 1989-90, interest charges are not reflected in Total Ordinary Expenditures.


Nova Scotia
Landings Profile 1989
Metric Tons (000)
550
525
500
475
450
425
400
375
350
325
300
275
250
225
200
175
150
125
100
75
50
25
0
1935 1940 1945 1950 1955 1960 1965 1970 1975 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989
Year


Nova Scotia
Landed Value Profile 1989
$ Landed Value (000,000)$
550
525
500
475
450
425
400
375
350
325
300
275
250
225
200
175
150
125
100
75
50
25
0
1935 1940 1945 1950 1955 1960 1965 1970 1975 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989
Year

DEPARTMENT OF FISHERIES

Telephone 424-4560: Halifax
485-8031: Pictou
485-8032: Pictou

Fax 424-4671: Halifax
485-4014: Pictou

Minister	Hon. Donald P. McInnes	Halifax
Secretary to the Minister	Mrs. Sharon Grandy	Halifax
Deputy Minister	Mr. D.A. (Sandy) MacLean	Halifax
Secretary to Deputy Minister	Miss Mary Evans	Halifax

Finance and Administration Division

Director	Mr. John Marsters	Halifax
Supervisor, Administration Services	Mr. Charles Allen	Halifax
Personnel/Payroll Clerk	Mrs. Marilyn Friis	Halifax
Accounting Clerk	Mrs. Nancy Wallace	Halifax
Clerk	Miss Sandy Kane	Halifax
Clerk Receptionist	Mrs. Michelle Chisholm	Halifax
Supply Technician	Mr. Frank MacKay	Pictou
Public Information Officer	Ms. Diane Kenny	Halifax
Computer Services Officer	Mr. Ken Westen	Halifax

Marketing Division

Director	Ms. Janis Raymond	Halifax
Secretary to Director	Ms. Judy Ganner	Halifax
Seafood Consultant	Mrs. Estelle Bryant	Halifax
Home Economist	Ms. Ellen O'Reilly	Halifax

Marine Resources Division

Director	Mr. Art Longard	Halifax
Administrative Assistant	Miss Debbie Cushing	Halifax
Advisor, Marine Resources (Crustaceans)	Mr. Greg Roach	Halifax
Advisor, Marine Resources (Groundfish/Plants)	Mr. Clarrie MacKinnon	Halifax
Advisor, Marine Resources (Pelagic)	Dr. Bob Crawford	Antigonish

Aquaculture and Inland Fisheries

Director	Mr. Linc MacLeod	Pictou
Secretary to Director	Mrs. Debra Langille	Pictou
Assistant Director	Mr. Murray Hill	Pictou
Biologist	Ms. Nancy Adams	Pictou
Fisheries Technician	Mr. Al MacNeil	Pictou

Aquaculture Co-ordinator	Dr. Catherine Enright	Halifax
Aquaculture Administrator		Halifax
Legal Services Technician	Ms. Kim Lipsett	Halifax
Hatchery Manager	Mr. Andrew Bagnall	Ship Harbour
Maintenance Worker	Mr. Ray Truen	Ship Harbour
Hatchery Manager	Mr. Don MacLean	Fraser's Mills
Fisheries Technician	Mr. Jim MacDonald	Fraser's Mills
Hatchery Technician	Mr. Darryl Murrant	Fraser's Mills
Hatchery Technician	Mr. Frank MacDonald	Fraser's Mills
Hatchery Manager	Mr. Mike McNeil	McGowan Lake
Hatchery Technician	Ms. Carolyn Holdright	McGowan Lake
Hatchery Technician	Mr. Bill Whitman	McGowan Lake

Industrial Development Division

Director	Mr. George Richard	Halifax
Secretary to Director	Ms. Doreen Jollimore	Halifax
Program Administrative Officer	Mr. Dave Hansen	Halifax
Incentive Programs Assistant	Ms. Linda Riles	Halifax
Fisheries Inspector	Ms. Mary Meagher	Halifax
Fisheries Inspector	Mr. Dana Rodgers	Halifax
Fisheries Inspector	Mr. Tom LeBlanc	Pictou
Fisheries Technician	Mr. Ole Egilsson	Pictou
Supervisor, Plants and Facilities	Mr. Gary Scott	Halifax
Construction Supervisor	Mr. Bill MacDonald	Halifax
Port Facilities Engineer	Mr. Marshall Giles	Halifax
Supervisor, Product Technology	Mr. Mike Drebot	Halifax

Nova Scotia Fisheries Loan Board

Executive-Director	Mr. John Marsters	Halifax
Manager, Fisheries Loans	Mr. Mack MacIntosh	Halifax
Secretary	Miss Nancy Corkum	Halifax
Clerk Typist	Mrs. Rita Jardine	Halifax
Chief Accountant	Mr. Mac Everett	Halifax
Accounting and Insurance Clerk	Mrs. Linda Fraser	Halifax
Accounting Clerk	Mrs. Barb Tribble	Halifax
Senior Loan Officer	Mr. Jim Sarty	Halifax
Loan Officer	Mr. Bruce Cox	Halifax
Loan Officer	Ms. Lorraine Provender	Halifax
Engineer	Mr. Mike Myketyn	Halifax
Fishing Vessel Inspector	Mr. Bernard Stockley	Halifax
Fishing Vessel Inspector	Mr. Bill Buffett	Halifax
Fishing Vessel Inspector	Mr. Tom Prewett	Halifax
Loans Administrator	Mr. Sonny Pellerin	Halifax

Training and Field Services

Training

Director	Mr. Jim McLevey	Halifax
Secretary to Director	Mrs. Barbara O'Brien	Halifax
Supervisor, Fisheries Training Centre	Mr. Don Robertson	Pictou
Chief Clerk	Mrs. Marjorie O'Toole	Pictou

Instructor (Navigation)	Mr. Greg MacNeil	Pictou
Instructor (Navigation/MED)	Mr. Brad MacCallum	Pictou
Instructor (Engines/MED)	Mr. Bill Grant	Pictou
Instructor (Engines)	Mr. Ira Grant	Pictou
Instructor (Engines)	Mr. Gilles Gauthier	Pictou
Instructor (Business/MED)	Miss Beulah Wright	Pictou
Instructor (Nets and Gear)	Mr. Allan Tobey	Pictou
Maintenace Worker	Mr. Ed Dalton	Pictou
Chief Cook	Mrs. Alexina MacKay	Pictou
Housekeeping Aid	Mrs. Lois Betts	Pictou

Field Services

Supervisor, Field Operations	Mr. Cecil Rankin	Pictou
Fisheries Representative	Mr. Adolphe Kehoe	Petit de Grat
Fisheries Representative	Mr. John McInnes	Port Hood
Fisheries Representative	Mr. Gerald Boudreau	Little Dover
Supervisor, Field Operations	Mr. Gerry Mossman	Rose Bay
Fisheries Representative	Mr. Gabriel d'Entremont	Clark's Harbour
Fisheries Representative	Mr. Arnold Muise	Middle West Pubnico
Fisheries Representative	Mr. Richard McDormand	Granville Ferry